India’s International Cooperation in Space

Presentation by Indian delegation to 58th session of STSC - UNCOPUOS Vienna, Austria

April 28, 2021
International Cooperation in shaping Indian space Programme

- Setting up of TERLS (1962) USSR-USA-France
- SITE (1975-76) USA’s Advanced Technology Satellite-6
- STEP (1977-79) Franco – German Symphonie
- Remote Sensing Experiments
  - 1st Sounding rocket from India USA, USSR, W. Germany, UK & Japan Nov 21, 1963
  - Coconut Root Wilt Disease Experiment 1971
  - BRIDE 1975
  - ARISE 1978
ISRO’s International cooperation – the spread

Countries: Afghanistan, Algeria, Argentina, Armenia, Australia, Bahrain, Bangladesh, Bhutan, Bolivia, Brazil, Brunei, Bulgaria, Canada, Chile, China, Egypt, Finland, France, Germany, Hungary, Indonesia, Israel, Italy, Japan, Kazakhstan, Kuwait, Maldives, Mauritius, Mexico, Mongolia, Morocco, Myanmar, Nepal, Nigeria, Norway, Oman, Peru, Portugal, Russia, Sao Tome & Principe, Saudi Arabia, Singapore, South Africa, South Korea, Spain, Sri Lanka, Sweden, Syria, Tajikistan, Thailand, The Netherlands, Tunisia, UAE, Ukraine, UK, USA, Uzbekistan, Venezuela & Viet Nam.

Multi-national bodies: EC, ESA, ECMWF, SAARC & EUMETSAT
ISRO’s International Space Cooperation - Domains

- Realisation of joint satellite missions (MEGHA-TROPIQUES, SARAL, NISAR, TRISHNA)
- Accommodation of payloads (CHANDRAYAAN-1, OCEANSAT-2 & ASTROSAT)
- Telemetry, Tracking & Command (TTC) stations at Brunei, Indonesia & Mauritius
- Disaster management (International Charter, Sentinel Asia, UNSPIDER, Search & Rescue)
- Capacity building (CSSTEAP, UNNATI)
- Participation in Advisory Committees on Policy Regulations
Cooperative Documents concluded in last One year

Apr 2020: Plan of cooperation with Israel Space Agency regarding cooperation in electric propulsion for small satellite

Aug 2020: MoU with Nigeria on cooperation in the exploration and uses of outer space for peaceful purposes

Oct 2020: Specific cooperation agreement with Mexican Space Agency on forest fire management using EO data and capacity building

Nov 2020: MoU with Kyoto University, Japan MOU for academic and research cooperation and exchange

Nov 2020: MoU with Bhutan on cooperation in the peaceful uses of outer space
The NASA – ISRO Synthetic Aperture Radar Satellite has seen significant progress. An Airborne campaign was conducted in US using Indian SAR. ISRO built L-Band SAR delivered to JPL, NASA during March 2021.

Feasibility study for the ISRO – CNES joint Thermal Infrared mission completed. Interface details for accommodating CNES ARGOS payload in ISRO Oceansat-3 has been finalized. Also finalized the cooperation in space medicine related to Indian human space flight program.

The Indian Astronaut trainee candidates were deputed to GCTC, Russia for spaceflight training. They have successfully completed the training. Discussions are progressing in other areas like crew seat, space suit, life support system elements etc.

Japan

completed the feasibility study for a joint lunar polar exploration mission and are currently finalizing the Phase-A study report. Finalized the details of establishing ISRO’s NavIC reference station in Japan.
<table>
<thead>
<tr>
<th>Country</th>
<th>Major Updates</th>
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<tbody>
<tr>
<td>Australia</td>
<td>Discussion on establishing a Transportable TTC Terminal for the Gaganyaan mission with Australian Space Agency</td>
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<tr>
<td>Bhutan</td>
<td>Discussion on to realise joint satellite with Bhutan</td>
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<tr>
<td>ESA</td>
<td>Finalizing ground station cross support with ESA</td>
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<tr>
<td>Israel</td>
<td>Exchange required technical details on cooperation in Electric Propulsion System with Israel Space Agency.</td>
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<tr>
<td>Mexico</td>
<td>Discussion on cooperate in the area of capacity building in forest fire management using earth observation data with Mexican Space Agency</td>
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As the Chair, ISRO organised the 34th Plenary of Committee on Earth Observation Satellites (CEOS) virtually during October 18-20, 2020.

About 130 officials from 62 member agencies and associated organisations have participated.

North Eastern Space Applications Centre (NESAC) has organised a 2-week training on Earth Observations Applications for the BIMSTEC officials during January 4-17, 2020.
Experimental Opportunity

Platform for Microgravity Experiments

- 0-g experiments
- Technology demonstration experiments
- Biological experiments
- Student payloads
- De-orbit & re-entry for Debris Management
Thanks

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